REMARKS

Reconsideration of this patent application is respectfully requested in view of the foregoing amendments, and the following remarks.

On Page 2 of the Office Action the Patent Examiner has approved the drawings received on October 4, 2004. However, new corrected drawings in compliance with 37 CFR 1.121(d) are required because the drawings were not formal drawings.

Therefore, correct formal drawings are now being filed in reply to the Office Action so as to avoid abandonment of the application. The requirement for corrected drawings will not be held in abeyance. Thus, formal drawings in compliance with U.S. practice are now filed herewith.

The Patent Examiner has rejected Claim 9 under 35 USC 103(a) as being unpatentable over *Ridgely (U.S. Patent No. 2,591,967)*.

On Page 3 of the Office Action, the Patent Examiner admits that *Ridgely* does not specifically teach the number of teeth to be 108 or the ratios of the second stage and third stage being 4 and 5.5, respectively. The Patent Examiner alleges that it would have been obvious to one of ordinary skill in the art at the time

of the invention to modify *Ridgely* to employ specific number of teeth and specific ratios, since such a modification would have involved a mere change in the size of a component. A change in size is generally recognized as being within the level of ordinary skill in the art. *In re Rose, 105 USPQ 237 (CCPA 1955).*

On Page 3 of the Office Action, the Patent Examiner has rejected Claim 8 under 35 USC 103(a) as being unpatentable over *Shirokoshi (DE 198 40 968 A1).*

On Page 4 of the Office Action, the Patent Examiner admits that *Shirokoshi* does not specifically teach the number of teeth to be 108 or the ratios of the second stage and third stage being 4 and 5.5, respectively. The Patent Examiner alleges that it would have been obvious to one of ordinary skill in the art at the time of the invention to modify *Shirokoshi* to employ specific number of teeth and specific ratios, since such a modification would have involved a mere change in the size of a component. A change in size is generally recognized as being within the level of ordinary skill in the art. *In re Rose, 105 USPQ 237 (CCPA 1955).*

On Page 5 of the Office Action, the Patent Examiner has

stated that Applicant, after experimentation, has figured out gear ratios that produce good results. Applicant claims this is the optimum range. However, discovering an optimum range from a previously taught invention through experimentation is obvious to one of ordinary skill in the art (see *In re Aller, 105 USPQ 233*).

The Applicant is also filing the executed completed Declaration. This Declaration Under Rule 132 by the inventor provides a clear and convincing showing that the inventor was able to achieve an unexpectedly and surprisingly beneficial result. It is respectfully submitted that the Patent Examiner is incorrect because the inventor discovered that it is possible to utilize non-even-number translation ratios. This represents the solution to a prior art problem that was never even recognized by the prior art.

Thus, it is respectfully submitted that the Patent Examiner's conclusion is in error. This is because changing the claimed ratio is much more than a mere change in the size of the structure and is much more than determining possible gear ratios that are merely an optimum range.

It is believed that neither case, *In re Rose* or *In re Aller,*

is relevant to the claimed invention. Also, it is believed that neither reference renders obvious the present invention.

The present invention relates to solving the problem of being able to achieve a significantly greater transmission ratio and torque transfer in a planetary transmission without significantly enlarging the overall volume of the device. In addition, the stiffness of the transmission is to be elevated significantly. Furthermore, the transmission is to be economically producible with simple means and is to ensure low-wear operation and transmission with little play.

By using four planet wheels across the width in individual transmission stages, on the one hand, high torques can be transmitted in these transmission stages, and, on the other hand, the stiffness of the transmission is significantly elevated.

Unexpectedly favorable transmission ratios resulted according to the invention when the transmission stages were each designed with four planet wheels in a planet carrier having a transmission ratio of i=5.5, particularly when the internal gear had 108 teeth. Total transmission ratios which were even could be achieved, particularly if an odd transmission ratio i=5.5 was

used. (Emphasis Added).

With a transmission of the invention, a transmission ratio of i=181, for example, can be achieved if the internal gears in which the planet wheels engage each have 108 teeth, the transmission ratios in the individual stages are $i_1 = 10$, $i_2 = 4$, and $i_3 = 5.5$, and in the last transmission stage, i.e. the third i this case (III), there are four planet wheels installed across its width, with only three planet wheels in each of the first two transmission stages.

In a transmission according to the invention which has the approximately the same volume as that known from *EP 0 824 640 B1*, but is slightly larger, an increase of more than 50% in the torque to be transmitted can be achieved. In the same way, an increase of approximately 50% in stiffness is also possible. These increases result, besides from the additional transmission stage, particularly from a use of four planet wheels in each of the two driven stages II, III, and from the selection of a transmission ratio of i = 5.5 in the transmission stage III, each of which is equipped with four planet wheels.

For transmission of higher moments, a three-stage

transmission according to the invention can be advantageously designed as follows.

- All internal gears have a number of teeth z = 108.
- In the third transmission stage, four planet wheels are provided in the planet carrier distributed across its width and i_3 = 5.5 is set as the transmission ratio.
- In the second transmission stage, either four or three planet wheels are provided in the planet carrier distributed over its width and i_2 = 4 is set as the transmission ratio for this stage.

For an internal gear with z = 108 teeth, surprisingly, with a predetermined transmission ratio of i = 5.5, four planet wheels can be used in an associated planet carrier, distributed across its width. In spite of this odd single stage transmission ratio, an even overall transmission can be achieved through kinematics according to the present invention (Emphasis Added).

A particular advantage is that, through the transmission kinematics according to the present invention and possible individual or overall transmission ratios, in a three-stage transmission, for example, uniform reliability of the gearings can be achieved, which allows, in turn, high transmittable

moments with, at the same time, low wear.

Only a slight, extremely damped noise emission issues outside the transmission housing from the rapidly running and therefore noise-intensive first two transmission stages. This is because the rotating parts of the first two transmission stages are not connected directly with the fixed transmission, and therefore, structure-borne noise issuing from them is only relayed over long paths with parting lines, which practically corresponds to a noise enclosure.

The case cited by the Patent Examiner, *In re Rose, 105 USPQ237 (CCPA 1955)* is that the appealed claims relate to a lumber package which is composed of individually banded bundles of lumber which vary in length. These claims were held to be obvious over prior art which taught similar lumber packages of different sizes. The claimed lumber package did not provide any unexpected results.

As discussed above, the claimed three stage, speed-reducing planetary transmission is of a totally different structure.

The present invention solves the problem of being able to

achieve a significantly greater transmission ratio and torque transfer in this type of transmission without significantly enlarging the overall volume. In addition, the stiffness of the transmission is to be elevated significantly.

Unexpectedly favorable transmission ratios resulted when the transmission stages were each designed with four planet wheels in a planet carrier having a transmission ratio of i = 5.5, particularly when the internal gear had 108 teeth. Total transmission ratios which were even could be achieved, particularly if an odd transmission ratio i = 5.5 was used.

Thus, contrary to *In re Rose*, the claimed transmission utilizes the claimed combination of a total even transmission ratio based upon an odd transmission ratio i = 5.5. Nowhere in the prior art of record is this concept taught, suggested or disclosed.

In re Aller, 105 USPQ 233, was cited by the Examiner to support the argument that optimum ranges are not a patentable difference. However, the cited prior art does not teach the number of gear teeth claimed and does not teach the ratio of the second stage to be 4 and does not teach the ratio of the third

stage to be 5.5. The claimed odd number ratio of 5.5 is uniquely different. Because there is no teaching of any such ratio at all in the prior art, there can be no optimization thereof. Thus, the case *In re Aller* is not relevant to the claimed invention.

Much more relevant cases will now be discussed by the Applicant.

Ex parte Murphy and Burford, 217 USPQ 479 (BdPatApp&Int 1982)

"[1] Assuming, arguendo, that this *Goldberg N.Z.* patent otherwise meets claim 1, the patent does not anticipate the claim under any paragraph of 35 U.S.C. 102. Since all limitations of a claim must be considered in determining the claimed subject matter as is referred to in 35 U.S.C. 103 and it is error to ignore specific limitations distinguishing over the reference,(Emphasis Added), *In re Boe, 505 F.2d 1297, 184 USPQ 38 (CCPA 1974)*, it is necessary that the modification of a prior art device to meet the claim be obvious from teachings in secondary references when taken in conjunction with the level of skill of those having ordinary skill in this art, before a proper basis is established to demonstrate obviousness of the claimed subject matter. *Graham v. John Deere, 383 U.S. 1,86 S.Ct. 684, 825 OG*

24, 148 USPQ 459 (S.Ct. 1966) states:

"Under § 103, the scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved. Against this background, the obviousness or nonobviousness of the subject matter is determined. Such secondary considerations as commercial success, long felt but unsolved needs, failure of others, etc., might be utilized to give light to the circumstances surrounding the origin of the subject matter sought to be patented. As indicia of obviousness or nonobviousness, these inquiries may have relevancy."

The Patent Examiner has ignored the claimed limitations of Z = 108 gear teeth, of i = 4 for the second stage, and of i = 5.5 for the third stage. Also, there is no secondary reference teaching these claimed features. Thus, claims 8 and 9 are patentable over the prior art.

The next case is *In re Hedges, et al., 228 USPQ 685 (CA FC 1986).*

"[1] Hedges argues that he sulfonates liquid diphenyl

sulfone at high temperature without the expected charring or reduced yields, and that "the totality of the prior art disclosures leads substantially away from the claimed invention". We agree with *Hedges* that the prior art as a whole must be considered. The teachings are to be viewed as they would have been viewed by one or ordinary skill. *Kimberly-Clark v. Johnson & Johnson, 745 F.2d 1437, 1454, 223 USPQ 603, 614 (Fed. Cir. 1984); In re Mercier, 515 F.2d 1161, 1165, 185 USPQ 774, 778 (CCPA 1975).* "It is impermissible within the framework of section 103 to pick and choose from any one reference only so much of it as will support a given position, to the exclusion of other parts necessary to the full appreciation of what such reference fairly suggests to one of ordinary skill in the art". *In re Wesslau, 353 F.2d at 241, 147 USPQ at 393. Hedges* correctly points out that the references all suggest that lower temperatures of reaction are preferable. No reference suggests that diphenyl sulfone may advantageously be reacted in the molten state with sulfur trioxide. The data provided by *Hedges* show significant advantages of the claimed invention; these data are not challenged by the PTO."

"On balance, *Hedges* proceeded contrary to the accepted wisdom. (Emphasis Added). This is "strong evidence of

unobviousness". *W.L. Gore & Assoc., Inc. V. Garlock, Inc., 721 F.2d 1540, 1552, 220 USPQ 303, 312 (Fed. Cir. 1983), cert. denied, 105 S. Ct. 172 (1984),* citing *United States v. Adams, 383 U.S. 39, 148 USPQ 479 (1966).*"

In the present invention, the claimed odd number transmission ratio of i = 5.5 is contrary to the accepted wisdom. Thus, the claims are patentable, because this is "strong evidence of unobviousness."

The next case is *In re Wright, U.S. Court of Appeals Federal Circuit 6 USPQ2d 1959, (1988).*

"[1] The problem upon which *Wright* was working was improving the pitch-measuring capability of the level, not the visibility of the bubble. The PTO, having conceded that *Wright's* structure was unobvious for his intended purpose, erred in holding that this was not relevant. The problem solved by the invention is always relevant. The entirety of a claimed invention, including the combination viewed as a whole, the elements thereof, and the properties and purpose of the invention, must be considered.

Factors including unexpected results, new features, solution

of a different problem, novel properties, are all considerations in the determination of obviousness in terms of 35 U.S.C. § 103. When such factors are described in the Specification they are weighed in determining, in the first instance, whether the prior art presents a prima facie case of obviousness. *See, e.g., In re Margolis, 785 F.2d 1029, 1031, 228 USPQ 940, 942 (Fed. Cir. 1986)* (comparative data in the Specification must be considered in PTO determination of unexpected results, as part of "the entire body of evidence...which must be weighed in the first instance by the PTO.") When such factors are brought out in prosecution before the PTO, they are considered in determining whether a prima facie case, if made based on the prior art, has been rebutted. *See, e.g., In re Piasecki, 745 F.2d 1468, 1472, 223 USPQ 785, 789 (Fed. Cir. 1984)* (rebuttal evidence is considered along with all other evidence of record). In either case, the requisite view of the whole invention mandates consideration of not only its structure but also its properties and the problem solved.

Applicant *Wright* agrees that he has combined old elements. The Commissioner agrees that *Wright* has achieved a new combination, and that the result obtained thereby is not suggested in the references. The patentability of such combinations is of ancient authority. *See, e.g., Prouty v.*

Draper, 41 U.S. (16 Pet.) 336, 341 (1842); Eames v. Godfrey, 68 U.S. (1 Wall.) 78, 79-80 (1863); Gill v. Wells, 89 U.S. (22 Wall.) 1, 25 (1874); see also H.T. Markey, Why Note the Statute?, 65 J. Pat. Off. Soc'y 331, 333-34 (1983) ("virtually all inventions are 'combinations', and ...*every* invention is formed of 'old elements'...Only God works from nothing. Man must work with old elements").

In regard to the present invention, the PTO position that the claimed transmission is prima facie obvious is not supported by the cited references. No reference shows or suggests the claimed features that Z=108 internal gear teeth, and that $i_2 = 4$ and $i_3 = 5.5$, or suggests the claimed combination as a solution to the problem of how to achieve a significantly greater transmission ratio and torque transfer in this type of transmission without significantly enlarging the overall volume. In addition, the stiffness of the transmission is to be elevated significantly. Therefore, based upon *In re Wright*, the claimed invention is patentable over the prior art.

For the convenience of the Patent Examiner, a copy of each case is enclosed, namely a copy of *Ex Parte Murphy and Burford, In re Hedges* and *In re Wright*.

In conclusion, the present invention, and all the claims, are believed to be patentable under 35 U.S.C. 103 over all the prior art applied by the Patent Examiner. A prompt notification of allowability is respectfully requested.

Respectfully submitted,

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Enclosures:
1) Formal drawings for FIG. 1, FIG. 2, FIG. 2a and FIG. 2b.
2) Executed Declaration Under Rule 132 of Thomas Bayer
3) Copy of 3 cases: *Ex Parte Murphy, In re Hedges* and *In re Wright*

I hereby certify that this correspondence is being deposited with the U.S. Postal Service as first class mail in an envelope addressed to: Commissioner of Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on February 28, 2005.

Maria Guastella

Ex parte Murphy and Burford

(BdPatApp&Int)
217 USPQ 479

Opinion dated Apr. 12, 1982
U.S. Patent and Trademark Office, Board of Patent Appeals and Interferences

Headnotes

PATENTS

1. Patentability — Anticipation — Modifying references (§ 51.217)

Since all limitations of claim must be considered in determining claimed subject matter as is referred to in 35 USC 103, and it is error to ignore specific limitations distinguishing over reference, it is necessary that modification of prior art device to meet claim be obvious from teachings in secondary references when taken in conjunction with level of skill of those having ordinary skill in art, before proper basis is established to demonstrate obviousness of claimed subject matter.

2. Patentability — Anticipation — In general (§ 51.201)

For teachings of reference to be prior art under 35 USC 103, there must be some basis for concluding that reference would have been considered by one skilled in particular art working on pertinent problem to which invention pertains; for no matter what reference teaches, it could not have rendered obvious anything, at time invention was made, to person having ordinary skill in art to which said subject matter pertains, unless said hypothetical person would have considered it.

Particular Patents — Animal Ear Tags

Murphy and Burford, reissue application, Animal Ear Tags and Applicators Therefore,

rejection of claims 1-9 reversed.

Case History and Disposition:

Appeal from Art Unit 334.

Application for reissue of patent of Brian E. Murphy and JohnR. Burford, Serial No. 80,407, filed Oct. 1, 1979, to reissue patent No. 3,731,414, issued May 8, 1973, based on application, Serial No. 138,575, filed Apr. 29, 1971 (Y-Tex Corporation, and Zoecon Corporation, protestors). From decision rejecting of claims 1-9, applicants appeal (Appeal No. 494-83). Reversed.

Attorneys:

Stanley W. Sokoloff and Blakely, Sokoloff, Tylor & Zafman, both of Beverly Hills, Calif., for appellants.

David A. Anderson, John J. Pavlak, and Hume, Clement, Brinks, Willian & Olds, Ltd., all of Chicago, Ill., for protestor Y-Tex Corporation.

Donald W. Erickson, Palo Alto, Calif., for protestor Zoecon Corporation.

Judge:

Before Messenheimer and Stahl, Examiners-in-Chief, and Pendegrass, Acting Examiner-in-Chief.

Opinion Text

Opinion By:

Messenheimer, Examiner-in-Chief.

This is an appeal from the final rejection of claims 1 through 9 which are all of the claims in the application.

Reissue of the original patent has been sought to correct the patent by proper claiming of the benefits from the earlier filing of the corresponding application for patent in New Zealand and to have the claims evaluated in light of numerous prior art documents. These prior art documents

were not made of record as having been considered by the examiner during the examination process which resulted in the grant of the original U.S. patent and came to appellants' attention during the course of obtaining rights in a number of foreign countries and in legal proceedings in the U.S. which include an action for infringement encaptioned Allflex Tag Co. Inc., and Delta Plastics Limited vs. Y-Tex Corporation, Civil Action No. 3-78-1420H in the United States District Court for the Northern District of Texas. Trial on that action has apparently been deferred until the PTO proceedings are concluded.

Y-Tex Corporation and Zoecon Corporation have both participated as protestors in the consideration of this application before the examiner and have raised a number of defenses to the validity of the patent including the nonobviousness of the claims under 35 U.S.C. 103, adequacy of the disclosure under 35 U.S.C. 112, first paragraph and definiteness of the claims under 35 U.S.C. 112, second paragraph. Briefs by both protestors were filed before us and Y-Tex Corporation was represented at the hearing on March 30, 1982.

The subject matter involves an identification tag for animals. For many years prior to the date when the present invention was made, it had been the practice to place an identification on an animal, such as a cow, by installing through the ear an identification tag. The appellants were among those seeking to improve the tag construction of a two-member type tag and the method of applying such a tag type which traditionally involves piercing the ear with a pin or spike that is part of a male member with the end of the pin or spike being captured by the surrounding walls of a hole in the female member in such a manner that the ear is sandwiched between the male and female tag members.

The claims before us are directed to an improved male member which has a novel spike construction that is adapted to be used with a female member. The particular female member disclosed in the application is unchanged from what appellants had marketed prior to making the present invention.

Claims 1, 7 and 8 are illustrative of the claimed subject matter on appeal and read as follows:

1. An animal ear tag comprising: a first component formed of resilient material having a hollow stem with a flanged outer end; a hollowed spike of hard material fitted on the flanged end of the hollow stem; and a second component formed of a resilient material having a boss with a hole of smaller cross-sectional size than the largest cross-sectional size of the hollowed spike, the second component being positionable on the stem adjacent the hollowed spike, the hollow in said stem and said spike being adapted to receive a support rod for positioning said stem within said hole in said boss during installation of said tag.

7. An animal ear tag as claimed in claim 1 wherein each component is formed of a resilient elastomeric plastics material.

8. The animal ear tag as claimed in claim 7 wherein said plastic material is polyurethane.

The rejection of claims 1 through 9 made by the examiner and which is before us pursuant to

35 U.S.C. 134, is under 35 U.S.C. 112, first paragraph, for failure to set forth the best mode as distinguished from failure to provide an enabling disclosure. See In re Gay, 50 CCPA 725, 309 F.2d 769, 135 USPQ 311 (1962) where Judge Rich stated that the

language in the first paragraph under 35 U.S.C. 112 reading:

> "* * * set forth the best mode contemplated by the inventor of carrying out his invention."

involves a requirement that is separate and distinct from the requirements of the earlier language in the same paragraph reading:

> "The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall * * *"

Although the examiner has not found that the claims are directed to subject matter that is obvious and hence has declined to enter a rejection under 35 U.S.C. 103, the protestors have both vigorously asserted that the claimed subject matter is obvious over the following patents:

Table set at this point is not available. See table in hard copy or call BNA PLUS at 1-800-452-7773 or 202-452-4323.

Obviousness-35 U.S.C. 103

The protestors have contended that we should enter a new rejection under 35 U.S.C. 103 based on obviousness which we have the authority to do by reason of 37 CFR 1.196(b). They contend that claim 1 is substantially readable on the Goldberg N.Z. patent. Y-Tex at page 48 of its brief (Paper No. 91) has sought to diagram claim 1 showing how it is readable on the ear tag shown in Figure 1 of the drawings in the Goldberg N.Z. patent. Where this patent fails to respond to the requirements of the claim is that the ear tag there disclosed does not employ a hollowed spike of hard material fitted on the flanged end of the hollow stem of resilient material.

[1] Assuming, arguendo, that this Goldberg N.Z. patent otherwise meets claim 1, the patent does not anticipate the claim under any paragraph of 35 U.S.C. 102. Since all limitations of a claim must be considered in determining the claimed subject matter as is referred to in 35 U.S.C. 103 and it is error to ignore specific limitations distinguishing over the reference, In re Boe, 505 F.2d 1297, 184 USPQ 38 (CCPA 1974), it is necessary that the modification of a prior art device to meet the claim be obvious from teachings in secondary references when taken in conjunction with the level of skill of those having ordinary skill in this art, before a proper basis is established to demonstrate obviousness of the claimed subject matter. Graham v. John Deere, 383 U.S. 1,86 S.Ct. 684, 825 OG 24, 148 USPQ 459 (S.Ct. 1966) states:

> "Under § 103, the scope and content of the prior art are to be determined;

> differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved. Against this background, the obviousness or nonobviousness of the subject matter is determined. Such secondary considerations as commercial success, long felt but unsolved needs, failure of others, etc., might be utilized to give light to the circumstances surrounding the origin of the subject matter sought to be patented. As indicia of obviousness or nonobviousness, these inquiries may have relevancy."

Y-Tex does not consider that claim 1 requires two different materials for the "hollow stem" and the "hollow spike," and has pointed to the affidavit of Dr. William Colburn [1] as demonstrating that one and the same material may be both "resilient" and "hard." This is true as a general proposition as "resilient" leaf springs frequently made from a metal alloy such as copper and bronze are also "hard." And we can grant Y-Tex the argument that claim 1 may not require two different materials, but that still does not overcome the clear claim requirements of a hollow spike of hard material on the one hand and on the other hand the fact that the spike must be fitted on the flanged end of the hollow stem which is of the resilient material. As is evident from the patent application disclosure, the inventors contemplated that the hollowed spike be molded onto a flange on the stem of resilient material. This is what the patent is all about.

The protestors rely on the secondary references to demonstrate that it would have been obvious to modify the male member of the Goldberg N.Z. patent to have a hollowed spike of hard material fitted on the flanged end of the hollow stem. The examiner declined to apply the secondary references based on his determination that modifying the ear tag disclosed in the Goldberg N.Z. patent was possible only by improper hindsight reliance on appellants' disclosure.

We agree with the examiner on this point noting that In re Nomiya, 509 F.2d 566, 184 USPQ 607 (CCPA 1975) states:

> "There must, however, be a reason apparent at the time the invention was made to the person of ordinary skill in the art for applying the teaching at hand, or the use of the teaching as evidence of obviousness will entail prohibited hindsight."

Y-Tex has urged that the examiner in determining that the secondary references to Westfall, Wolf and Kember are from nonanalogous art, has applied a fundamentally erroneous standard of what constitutes nonanalogous art and disregarded In re Heldt, 433 F.2d 808, 167 USPQ 676 (CCPA 1970).

In In re Heldt, supra, the court considered whether the addition of a metallic ring on the end of a thin walled plastic tube for the sole purpose of strengthening the tube was unobvious over a similar unreinforced tube and a secondary reference describing a corrugated, sheet metal culvert or drain pipe, with its ends structurally reinforced by outwardly curling the edges to form a

channel and seating a circular "rod" within the channel. The court permitted inquiry into other seemingly unrelated and non-analogous areas of technology because one of even limited technical skill would be aware that thin walled tubes have a problem of collapsing and that a reinforcement of the type claimed had been employed to overcome this problem.

In a subsequent case, In re Wood, 599 F.2d 1032, 202 USPQ 171 (CCPA 1979) the same court stated:

> "The determination that a reference is from a nonanalogous art is therefore two fold. First, we decide if the reference is within the field of the inventor's endeavor. If it is not, we proceed to determine whether the reference is reasonably pertinent to the particular problem with which the inventor was involved."

We do not share the view of Y-Tex that appellants' solution here of finding a commercially successful and efficient way of installing an ear tag on an animal was a simple and readily recognizable matter. In considering obviousness of the reinforcement of a thin walled, plastic tube as addressed by the court in In re Heldt, supra, the record there did not reflect numerous prior art diverse efforts where a satisfactory solution had escaped the attention of those who had tried as is reflected by the record here showing a wide variety of prior art animal ear tags.

The secondary references are clearly not directed to the field of endeavor to which the present invention pertains, nor are they reasonably pertinent to the specific problem of providing a spike for puncturing a hole in a member that is comparable to the ear of an animal while installing simultaneously a two-piece item on opposite sides of the punctured member.

[2] As stated in In re Horn, 203 USPQ 969 (CCPA 1979)

> "For the teachings of a reference to be prior art under 35 U.S.C. 103, there must be some basis for concluding that the reference would have been considered by one skilled in the particular art working on the pertinent problem to which the invention pertains. For no matter what a reference teaches, it could not have rendered obvious anything, 'at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains,' unless said hypothetical person would have considered it."

The Westfall and Wolf patents both involve the insertion of a spike in an already existing puncture or hole in a pneumatic tire, their purposes being to carry a means to seal the puncture against an air leak. We think they are from a non-analogous art.

The Kember patent, while disclosing a spike adapted to go through a fabric on which a button is to be fixed, fails to suggest employing a hollowed spike of hard material fitted on the flanged end of a hollow tube. While we agree with Y-Tex that the Kember patent may be part of the analogous art, it does not cure the deficiency of the Goldberg N.Z. patent disclosure.

For the foregoing reasons, as well as those given by the examiner, we decline to enter a new

rejection under 35 U.S.C. 103.

Definiteness of Claims – 35 U.S.C. 112, Second Paragraph

Protestor Zoecon has challenged the claims under 35 U.S.C. 112, second paragraph, on the ground of indefiniteness, by arguing that the term "resilient material" does not particularly point out and distinctly claim that which appellants regard to be their invention. Zoecon notes that the specification provides no definition or parameters for the "resilient material" that would permit one to determine what subject matter the claims encompass other than polyurethane, or for the "hard material" other than "hard plastics or other rigid materials."

We have carefully considered all of Zoecon's arguments on this point, but we feel the examiner has adequately addressed this issue and hereby adopt the position of the examiner as stated in the answer. We decline to enter a new rejection under 35 U.S.C. 112, second paragraph.

Enablement and Best Mode as to Spike – 35 U.S.C. 112, First Paragraph

While the main thrust of the positions of both protestors and the examiner is directed to the "best mode" issue discussed infra, Y-Tex has urged that there is a lack of enabling disclosure, i.e. how to make and use, since appellants filed their patent application in New Zealand in January 1971, in the U.S. in April 1971 and failed to have the product ready for the market until June 1971. The product that appellants' assignee actually marketed, employed a hollow spike not of "hard plastics as mentioned in column 1, line 41 of the specification but instead, of brass. The patent does not mention brass or any other type of metal.

Y-Tex, after deposing the inventors on the question of withholding information on the use of spikes made of a metal material, contended before us that the failure to market a "hard plastics" spike was evidence that the disclosure did not provide sufficient working procedure for one skilled in the art to practice the claimed invention without undue experimentation citing In re Stephens, 529 F.2d 1343, 188 USPQ 659 (CCPA 1976) and In re Coleman, 472 F.2d 1062, 176 USPQ 522 (CCPA 1973).

We have reviewed the transcripts of the depositions referred to and are satisfied that "undue experimentation" was not involved on the adoption and choice of a material for the hollowed spike. Appellants' testing during this time period used traditional materials for constructing the new male component. The female component of the two component tag was already in production and made of polyurethane. The purpose of the testing was not to determine if the new male member when constructed properly would work, but to assess which manufacturing technique would produce an acceptable product at the lowest manufacturing cost to appellants'

assignee, bearing in mind a strong desire to reach the market in June 1971.

Being in the plastic molding business and not in the metal business, it is readily apparent that appellants' assignee during the early months in 1971 before the U.S. application was filed, looked to an all plastic male member as being the preferred or best mode. The fact that after the U.S. application had been executed preparatory to filing, a local supplier furnished metal spikes at a cost that did not warrant redesign of the product, is an adequate answer to dispel any question of enablement of the overall disclosure, or best mode as to the hard material of the spike.

For these reasons, as well as those stated by the examiner, we decline to enter a new rejection under 35 U.S.C. 112, first paragraph, based on lack of enablement or on failure to disclose the best mode with relation to the spike.

Best Mode Rejection

The examiner's rejection is based on the following statement of JohnR. Burford:

> "However since 1968, when we first started making ear tags with flexible components, we have chosen to keep as our own confidential business information the name of our source (and its designation of the grade) so that our competitors would not, without doing their own research, know which material we use to ensure the longevity of our product."

The examiner stated:

> "In light of the above-quoted statement, it must be concluded that Applicants intentionally concealed the 'best mode contemplated' of carrying out their invention. They knew of a specific polyurethane which they felt was best; they contemplated and, moreover, used such material, yet they intentionally kept the information to themselves.
>
> The examiner relies on Dale Electronics v.R.C.L. Electronics [488 F.2d 387] 180 USPQ 255 , at 229-230, [1st Cir. 1973], for support. In that case a patent was declared invalid for failing to disclose the 'best mode' with respect to a specific material that the inventor knew worked very well. The patent was held invalid even though the nondisclosure was argued to have been unintentional. The instant situation is stronger. Here there is no doubt as to intent. The declaration of coinventor Burford, quoted above, is evidence that the non-disclosure of a specific polyurethane was intentional."

We think the examiner has erred by placing an undue emphasis on the "intentional" aspect of the concealment. It is apparent that the examiner has treated "intentional concealment" as the pivotal point without regard as to what relation the concealed subject matter has to the essence of the invention.

As stated in In re Sichert, 566 F.2d 1154, 196 USPQ 209 (CCPA 1977):

> "This rejection is similar to the one in In re Bosy, 53 CCPA 1231, 1236, 360 F.2d

> 972, 976, 149 USPQ 789, 792 (1966), where 'the error of failing to 'analyze exactly what appellant's invention is in the instant case,' has resulted in the additional error [by the PTO] of requiring a best mode be set forth of details not relating to the essence of the invention.'"

In In re Sherwood, 613 F.2d 809, 204 USPQ 537 (CCPA 1980) no special consideration was given as to whether the concealment was "accidental or intentional." The court there stated that evidence of concealment must tend to show that the *quality* of an applicant's best mode disclosure is so poor as to effectively result in concealment.

The problem which underpins the examiner's rejection based on the failure to set forth the best mode, arises not because of any inadequacy of the disclosure in the specification or because of any concealment with respect to the hollowed spike of hard material fitted over the flanged end of the hollow stem which has to do with what we regard to be the essence of the invention. Instead, the basis for the examiner's rejection centers on concealment of the *source* of polyurethane and its designation of the *grade* that the inventors actually used and considered to be the preferred material at the time when their invention was made and the application for patent was filed.

That polyurethane had been used commercially as a material for an animal ear tag of earlier designs that were marketed prior to appellants' present invention has been established. The Nardo declaration [2] through its reference to the Richie U.S. patent number 3,552,051 which issued on January 5, 1971 is significant. The statements in the Nardo declaration, see for example paragraph 14 et seq., are strong evidence that use of polyurethane as a suitable molding material for animal identification ear tags was well known to those working in this art prior to appellants' date of invention.

The Howe U.S. patent number 3,694,949 which was filed on January 29, 1970 entitled Animal Identification Tag and Installation Tool Therefore states in column 3, lines 34-37:

> "Each of the connector tag C and the auxiliary tag A are conveniently molded from a suitable tough but resilient plastic, such as polyurethane, or any other suitable material."

The Nardo declaration lists seven suppliers and twenty-two grades of flexible elastomeric polyurethanes that were commercially available prior to 1971 and asserts that it would have then been known to be suitable for molding ear tags of the type then on the market. Appellants' preference to use a particular grade from a particular supplier was for commercial reasons, not because the other grades available from other suppliers would not work.

It appears from the Nardo declaration that the choice of supplier and grade of polyurethane

that would be preferred in a specific ear tag would have been determined by the concern over the relative importance of various factors such as

(1) tear resistance

(2) hydraulic resistance

(3) resistance to ultraviolet radiation

(4) resistance to fungal or microbial attack

(5) appearance

(6) price.

These factors do not bear upon the ability of a person skilled in the plastic molding art to practice the invention, i.e. to produce a workable tag. Importance attachs to the above factors primarily because of business considerations. For example, for ear tags that are applied only when an animal is ready for sale to a facility which slaughters the animal, those factors which affect longevity become relatively unimportant and price considerations may be paramount. On the other hand where tags are applied to animals which are expected to be kept for several years, the relative importance of the longevity factors may far out-weigh those concerning price.

Y-Tex has contended that the prior use of polyurethane by the employer of the appellants as well as mention of the use of polyurethane for the use of animal ear tags in patents of others and the general commercial availability of polyurethane is totally irrelevant to the determination of whether there was a failure of the application to comply with the requirement of 35 U.S.C. 112, first paragraph, pertaining to the best mode. It is the fact of this concealment of the identity of the source and its grade of polyurethane which the inventors then preferred, that is the thrust of the conduct which constitutes a concealment of the best mode according to Y-Tex. In support of this proposition of law, reliance is placed on Dale Electronics v.R.C.L. Electronics, Inc., supra, since the claim there involved was to a device comparable to an ear tag claimed here, and the "plastic insulation material" was part of the claim just as "resilient material" is part of claim 1 here.

The limitations which relate to the plastic insulation material in the single claim of the patent number 3,206,704 to Hay which was invalidated in the Dale case are:

> "* * * said plastic having the characteristic of remaining in a hard dense state during the sustained high operating temperatures of said resistor element, and completely filling the space in said bore around said resistor element to surround said resis

> tor element with an insulative layer of substantial thickness, and to support said resistor element in all directions to rigidly hold said resistor element against detachment from said housing.

said insulation material extending completely to the plane of the open ends of said bore so that the outer shape of said casting material defines a cylinder that has the same internal volume as said bore,

said insulation material having a density greater than that of identical material formed into a solid under atmospheric pressure.

the plastic insulation material at the extreme ends of said bore being exposed to the atmosphere * * *"

At the time the original application was filed, the inventor, Hay, knew that a specific material worked very well and that he had failed to make work many other materials in the classes described in the specification at column 2, line 53 et seq. which states:

"There are high-temperature plastic insulation materials which are suitable and I recommend materials in the classifications of epoxys, phenolics or Silicones. These three compounds with perhaps suitable mineral fillers are excellent for transfer molding. The use of powder or pellet material plastic casting is usually know as 'pressure casting' or 'plastic injection molding.' Pressure plastic molding machines use both heat and pressure to solidify the powder or pellet plastic material within the cavity mold."

The key to the holding in Dale are the facts that

(1) the plastic insulating material was an important part of the novelty or essence of the invention;

(2) a number of the materials within the classes disclosed in the specification would not work and this fact was known to the inventor when the application was filed; and

(3) there was a failure (whether accidental or intentional is immaterial) to identify the one material, Rogers RX600, that he knew worked very well.

In our opinion the Dale case is not applicable here because

(1) the polyurethane material as disclosed was already known to be a suitable material for animal ear tags and therefore its use was neither a novel part of nor the essence of the invention [3] ;

(2) twenty-two grades polyurethane available from seven manufacturers at the time when appellants filed their application for patent were apparently all workable; and

(3) concealment of the preferred source and grade of the disclosed polyurethane material did not give rise to experimentation by others to find a workable material.

The protestors have additionally relied upon the Reynolds Metals Co., v. Acorn Building Components, Inc., 548 F.2d 155, 192 USPQ 737 (6th Cir. 1977) which involved Patent No. 3,204,324 to Nilsen. The Nilsen patent involved a new method of constructing a window frame

by pouring an epoxy solution into U-shaped metal channels which are removed after the epoxy has solidified. The court noted that the specification did not set forth any specific resinous material among the many that exist, some of which were *not suitable* , and that the specification therefore was so deficient that those persons who were skilled in the art of making insulated window frames were unable to practice the method without additional information. This, of course, demonstrates that the specification failed to disclosed how to make and use the process of the invention. In addition, the court stated:

"With regard to the 'best mode' clause of 35 U.S.C. § 112 the District Court found:

> 'Nilsen knew of a particular resinous material, namely, an epoxy called 'Epotuf' plus a fiber additive which he used successfully. However, the patent does not disclose the use of said material. Thus, the 'best mode' which, in fact, was the only mode contemplated by Nilsen, was not set forth in the patent as required by 35 U.S.C. 12.'"

The relevant part of the specification in the Nilsen patent in column 2 at line 48 reads:

"Insulating spacer 12 may be made from any of the insulating materials used for such purposes in the art. In the preferred embodiment the insulating spacer is suitably made from a resinous material and may also include inorganic fillers and/or fibers that are selected for the strength as

well as the insulating properties they impart. In any event, the insulating spacer composition is compounded to have the tensile strength, dimensional stability, resistance to impact, moisture, and sub-freezing temperatures as required by the particular installation. Preferably, the insulating material should exhibit good adhesion to the metal employed such as aluminum. However, this quality is not necessarily essential to the operability of the construction because of the mechanical interlocking aspects noted above."

It is clear that the essence of the invention involved use of a suitable molding material which had apparently not been used in this type of product previously; that the molding material was broadly described in such a fashion that some of the materials falling within the broad description *would not work* ; and that the inventor knew of a particular epoxy called "Epotuf" plus a fiber additive which he had used successfully that was not identified in the patent.

From what we have said earlier, it is apparent that the facts in the case before us are distinguishable from those present in the Reynolds case.

The protestors have also relied upon Union Carbide Co. v. Borg Warner Co., 500 F.2d 355, 193 USPQ 1 (6th Cir. 1977). Judge Miller, who was sitting by designation, authored the opinion holding a patent invalid on the basis that the best mode had not been disclosed because the

disclosed valve permitted the formation of an undesired unfoamed slug of solid plastic whereas a new improved valve had been tested and adopted for use in a pilot plant prior to the filing of the application. The failure to disclose this new improved valve in the first application was held to be improper. As a second point, a two stage extruder was also known at the time when the first application was filed, to be better than the single stage extruder actually disclosed in the application. The two stage extruder was important to the process of the invention because it allowed for the injection of gas which was characterized by the inventor as a desirable achievement which apparently could not be accomplished with the conventional single stage extruder. The opinion demonstrates that both the valve and the extruder apparatus were important to the essence of the invention and that the failure to disclose the specifics of the improved valve and the two stage extruder constituted a failure to comply with the "best mode" requirement under 35 U.S.C. 112, first paragraph.

As is apparent from what we have said above, the facts in the case before us are clearly distinguishable from the factual situation in the Union Carbide case.

We have also considered the other contentions and arguments of the protestors in support of the examiner's rejection not mentioned above as well as the replies to the questions propounded by the Assistant Commissioner. In our opinion, the concealment of the name of the source (and its designation of the grade) of polyurethane preferred by the appellants at the time their application was filed did not so affect the *quality* of their best mode disclosure as to effectively result in concealment of the claimed invention. See In re Sherwood, supra, including footnote 8 thereto.

The examiner's rejection of claims 1 through 9 under 35 U.S.C. 112, first paragraph, for failure to disclose the "best mode" is reversed.

Reversed

Footnotes

Footnote 1. The Colburn affidavit was filed by appellants with Paper No. 21.

Footnote 2. The Nardo declaration was filed by appellants with Paper No. 77.

Footnote 3. See Protest of Y-Tex Corporation to Application for Reissue Patent, Paper No. 12, page 11 which states:

> "Claim 8 is expressly directed to a tag made of polyurethane, which is not specifically mentioned in Goldberg N.Z. However, as pointed out above, Goldberg teaches other plastics with similar properties, and no criticality is attached by applicant [appellants] to the use of polyurethane. Moreover, polyurethane is a well-known material for the manufacture of ear tags. See, e.g., Richie, U.S. Patent No. 3,552,051 (applicant's Exhibit

39), column 1, lines 51-54."

- End of Case -

In re Hedges, et al.

(CA FC)
228 USPQ 685

Decided February 12, 1986
No. 85-2524
U.S. Court of Appeals Federal Circuit

Headnotes

PATENTS

1. Invention -- Specific cases -- Chemical (§ 51.5093)

PTO acted erroneously in determining that claimed process for sulfonating diphenol sulfone at its molten state would be obvious from prior art, since references all suggest that lower temperatures are preferable, and none suggests that reaction may be advantageously produced at molten state, and since data produced by inventor, and not challenged by PTO, show significant advantages of claimed invention, so that, on balance, inventor proceeded contrary to accepted wisdom, which is strong evidence of unobviousness.

Particular patents -- Sulfonic Acids

Hedges and Mark, application, Process for Preparing Aryl Sulfone Sulfonic Acids, rejection of claims 8, 9, and 10, reversed.

Case History and Disposition:

Appeal from Patent and Trademark Office Board of Appeals.

Application for patent of Charles V. Hedges and Victor Mark, Serial No. 301,396. From decision affirming rejection of claims 8, 9, and 10, applicants appeal. Reversed.

Attorneys:

Martin B. Barancik, Mount Vernon, Ind. (John W. Schneller, and Lyon & Lyon, both of Washington, D.C., on the brief) for appellants.

Henry W. Tarring, Associate Solicitor, Office of the Solicitor (Joseph F. Nakamura, Solicitor, and Fred E. McKelvey, Deputy Solicitor, on the brief) for Patent and Trademark Office.

Judge:

Before Markey, Chief Judge, Miller, Senior Circuit Judge, and Newman, Circuit Judge.

Opinion Text

Opinion By:

Newman, Circuit Judge.

The decision of the United States Patent and Trademark Office (PTO) Board of Appeals (Board), affirming the rejection of claims 8, 9, and 10 of United States patent application Serial No. 301,396 as unpatentable under 35 U.S.C. § 103, is reversed.

OPINION

This patent application of Charles V. Hedges and Victor Mark (collectively Hedges or applicant) is for a "Process for Preparing Aryl Sulfone Sulfonic Acids". Claim 8 is representative:

> 8. A process for sulfonating diphenyl sulfone which comprises contacting diphenyl sulfone in its molten state with a sulfonating agent consisting essentially of sulfur trioxide under substantially anhydrous conditions in the absence of a solvent.

Hedges' invention is the reaction of diphenyl sulfone, at a temperature above its melting point of 127°C, with liquid or gaseous sulfur trioxide in the absence of water or a solvent, thereby sulfonating the sulfone in high yields without forming by-product sulfuric acid.

The only rejection is under 35 U.S.C. § 103, and the Board relied only on Felix U.S. Patent No. 2,010,754. Hedges has cited three additional references, parts of which were discussed by the Board: Mark U.S. Patent No. 3,948,851, British Patent No. 820,659, and certain pages of a book by Gilbert entitled "Sulfonation and Related Reactions". The PTO Solicitor on this appeal

discusses and relies on all these references.

Felix shows the sulfonation of aryl sulfones with sulfur trioxide in the form of fuming sulphuric acid. Sulfonation is carried out at 5-10°C, after which the temperature rises exothermically to 30°C before it is lowered to room temperature. The Board held that this, without more, makes a prima facie case of obviousness.

Hedges has taken the position, before the Board and before us, that the low temperatures shown by Felix defeat any prima facie case of obviousness of the reaction at above 127°C. Hedges also argues that, viewing the references as a whole, it would not have been obvious to operate in the molten state at high temperatures. The Board held that Hedges had not produced "persuasive objective evidence" in rebuttal.

Only after the PTO has made a prima facie case of obviousness does the burden of coming

forward shift to the applicant. *In re Rinehart,* 531 F.2d 1048, 1051, 189 USPQ 143, 147 (CCPA 1976). If a prima facie case is made in the first instance, and if the applicant comes forward with reasonable rebuttal, whether buttressed by experiment, prior art references, or argument, the entire merits of the matter are to be reweighed. *In re Piasecki,* 745 F.2d 1468, 1472, 223 USPQ 785, 788 (Fed. Cir. 1984).

In the case before us, we do not agree with the PTO that Felix alone supports a prima facie case of obviousness. Felix makes clear that low temperatures are the desired conditions for this reaction. However, the Solicitor has elaborated on and strengthened the PTO argument by drawing on the additional prior art cited by Hedges. Hedges takes vigorous exception to this procedure, arguing that he has been deprived of the opportunity to respond before the PTO to these "new grounds of rejection" and to produce evidence in rebuttal.

We and our predecessor court have not condoned the presentation of new grounds of rejection for the first time on appeal. *In re Hounsfield,* 699 F.2d 1320, 1324, 216 USPQ 1045, 1049 (Fed. Cir. 1982); *In re Zeidler,* 682 F.2d 961, 967, 215 USPQ 490, 494 (CCPA 1982); *In re Nygard,* 341 F.2d 924, 928-9, 144 USPQ 586, 590 (CCPA 1965). In Hedges' case the Solicitor referred to new portions of the references cited by Hedges during examination for further support of the same rejection that had been upheld by the Board. Hedges had relied on these references before the Board, as he does before us, for his argument that viewed as a whole the body of prior art teaches away from conducting this reaction at high temperatures. The Solicitor should not be constrained from pointing to other portions of these same references in contravention of Hedges' position. *In re Wesslau,* 353 F.2d 238, 241, 147 USPQ 391, 393 (CCPA 1965) (the reference is considered in its entirety for what it fairly suggests to one skilled in the art). On these facts, we do not discern that the Solicitor has violated the rule against presenting new issues on appeal. The Solicitor has done no more than search the references of record for disclosures pertinent to the same arguments for which Hedges cited the references.

The PTO argues that Felix shows no upper limit to the temperature of the reaction, and that determining the optimum temperature is a matter of "routine experimentation". The plain reading of Felix is contrary to the PTO position. As was said in *In re Rosenberger,* 386 F.2d 1015, 1018, 156 USPQ 24, 26 (CCPA 1967), "[t]his appears to be an extremely strained interpretation of the reference which could be made only by hindsight."

To overcome this deficiency in Felix the Solicitor directs attention to the British patent, which discusses the reaction of liquid phenols with liquid sulfur trioxide in the absence of a solvent. The PTO points to the teachings of reaction at elevated temperature:

> The invention is applicable to liquid and solid phenols . . . having melting points up to 115°C . . . and to mixtures of phenols whose individual melting point is higher than 115°C but which give in admixture a melting point of 115°C or lower.
>
> For mono-sulphonic acids . . . the temperature is kept above the melting point of the phenol used.
>
> . . . the liquid sulphur trioxide is added . . . at a temperature slightly above the melting point of the phenol in the case of solid phenols, and after the addition the reaction mass is heated at a higher temperature of 160-180°C. . . .

The highest-melting phenol illustrated in the British patent is resorcinol, melting point 110°C, to which

> liquid sulfur trioxide is added . . . at a temperature of 115-140°C. . . . The product, which is almost black in colour and sets to a brittle solid on cooling, is substantially the monosulphonic acid in quantitative yield.

The Solicitor asserts that this shows that aromatic compounds can be sulfonated, in the absence of solvent, in the molten state, at the temperatures contemplated by Hedges. Hedges argues that the British patent expressly teaches that the reaction cannot be carried out with phenols that melt higher than 115°, that the upper temperature range reported for resorcinol is reached during the exothermic reaction, and that the black color and brittle product are due to charring and decomposition. Hedges argues that the British patent does not negate the overall teachings of the art as a whole that lower temperatures are preferred for optimum results, and that the charring at higher temperatures that is shown in the British patent belies the broad conclusion that the Solicitor attempts to draw. The cited references support Hedges' position.

The Mark patent shows diphenyl sulfone sulfonated with sulfur trioxide and states that by "well known methods . . . these reactions can be carried out at room temperature or at elevated temperatures such as about 50°C". Mark, who is co-inventor herein, has averred that reaction at 50°C obviously requires the presence of a solvent, because diphenyl sulfone is a solid at 50°C. The PTO does not dispute this point. We do not agree with the Solicitor that Mark is an open-ended teaching of the use

of higher temperatures, such as over 127°C, for this reaction, merely because Mark does not state that "about 50°C" is a maximum temperature; that PTO reading is not a reasonable one. Applicant argues that the Mark patent is a further example of the belief then held by those skilled in this art that lower temperatures were needed for optimum results in direct sulfonation reactions. Mark as co-inventor has supported this view with declarations of record.

Both the Solicitor and the applicant rely on the Gilbert book which, at page 67, discusses the reaction of benzene with sulfur trioxide under various conditions. Gilbert states:

> With both reagents in the vapor phase, a 50% yield of sulfone is obtained at 150-200°C, and 30% at 70-80°C. . . . Addition of SO 3, either as a liquid or vapor, to liquid benzene gives 15-18% sulfone, but addition of liquid benzene to liquid SO 3yields 7.5%.

Hedges argues that this counters Gilbert's general statement, on which the PTO places great emphasis, that "[p]otentially, the most attractive and practical procedure for sulfonating benzene and other aromatics is by direct reaction with SO 3, since the process is instantaneous, smoothly exothermic, and can involve simple mixing of the two liquids". Hedges points out that despite these "potential" advantages, Gilbert's specific example of the "simple mixing of two liquids" gave only a 15-18% yield.

In contrast to Gilbert's 15-18% yield from the reaction of sulfur trioxide with liquid benzene, Hedges obtained a 96% yield from the reaction of sulfur trioxide with liquid diphenyl sulfone. Other portions of Gilbert, discussed by both the PTO and Hedges, are equally subject to conflicting interpretation. We agree with Hedges that Gilbert cannot fairly be given the predictive virtues attributed to it by the Solicitor.

[1] Hedges argues that he sulfonates liquid diphenyl sulfone at high temperature without the expected charring or reduced yields, and that "the totality of the prior art disclosures leads substantially away from the claimed invention". We agree with Hedges that the prior art as a whole must be considered. The teachings are to be viewed as they would have been viewed by one of ordinary skill. *Kimberly-Clark v. Johnson & Johnson,* 745 F.2d 1437, 1454, 223 USPQ 603, 614 (Fed. Cir. 1984); *In re Mercier,* 515 F.2d 1161, 1165, 185 USPQ 774, 778 (CCPA 1975). "It is impermissible within the framework of section 103 to pick and choose from any one reference only so much of it as will support a given position, to the exclusion of other parts necessary to the full appreciation of what such reference fairly suggests to one of ordinary skill in the art". *In re Wesslau,* 353 F.2d at 241, 147 USPQ at 393. Hedges correctly points out that the references all suggest that lower temperatures of reaction are preferable. No reference suggests that diphenyl sulfone may advantageously be reacted in the molten state with sulfur trioxide. The data provided by Hedges show significant advantages of the claimed invention; these data are not challenged by the PTO.

On balance, Hedges proceeded contrary to the accepted wisdom. This is "strong evidence of

unobviousness". *W.L. Gore & Assoc., Inc. v. Garlock, Inc.,* 721 F.2d 1540, 1552, 220 USPQ 303, 312 (Fed. Cir. 1983), *cert. denied,* 105 S. Ct. 172 (1984), citing *United States v. Adams,* 383 U.S. 39, 148 USPQ 479 (1966).

The PTO decision that the invention of claims 8-10 would have been obvious in terms of 35 U.S.C. § 103 is reversed.

REVERSED

- End of Case -

In re Wright

U.S. Court of Appeals Federal Circuit
6 USPQ2d 1959

Decided May 24, 1988
No. 87-1464

Headnotes

PATENTS

1. Patentability/Validity -- Obviousness -- In general (§ 115.0901)

Patent and Trademark Office erred in denying on grounds of obviousness patent for carpenter's level which had as its primary purpose improved pitch-measuring capability over prior art but which incorporated prior art of internal pin to improve visibility of level bubble, since obviousness determinations under 35 USC 103 must include consideration of invention as whole, including its structure, its properties, and problem it solves, and thus unobviousness of level's

structure for its intended purpose is relevant to obviousness determination.

Case History and Disposition:

Appeal from Board of Patent Appeals and Interferences' rejection of claims 1 through 8 of patent application, serial no. 399,850, of Randall J. Wright. Reversed.

Attorneys:

Robert W. Slater and Jones, Day, Reavis & Pogue (Robert L. Lindgren, on brief), Chicago, Ill., for appellant.

Lee E. Barrett, associate solicitor (Joseph F. Nakamura, solicitor and Fred E. McKelvey, deputy solicitor, on brief), for appellee PTO.

Judge:

Before Friedman, Newman, and Mayer, circuit judges.

Opinion Text

Opinion By:

Newman, J.

The judgment of the Board of Patent Appeals and Interferences of the United States Patent and Trademark Office, rejecting claims 1 through 8 of patent application Serial No. 399,850 of Randall J. Wright for "Level Vial with Extended Pitch Range", is reversed.

The Invention

Instruments that are commonly called carpenter's levels have long been known. They used small liquid-filled transparent vials with an entrained gas bubble; the vials function by gravity, the bubble automatically seeking the highest point within the vial. The vial is attached to a support, such that when the surface on which the support is placed is level, the bubble is centered. Thus, the position of the bubble shows the orientation of the vial and of the support.

Levels in common use today are made from barrel-shaped vials, mounted so that the bubble may be viewed from either side of the vial. An example of a barrel-shaped vial set in a molded plastic housing is shown in Vaida U.S. Patent No. 3,871,109, of record:

Tabular, graphic, or textual material set at this point is not available. Please consult hard copy or call BNA PLUS at 1-800-452-7773 or 202-452-4323.

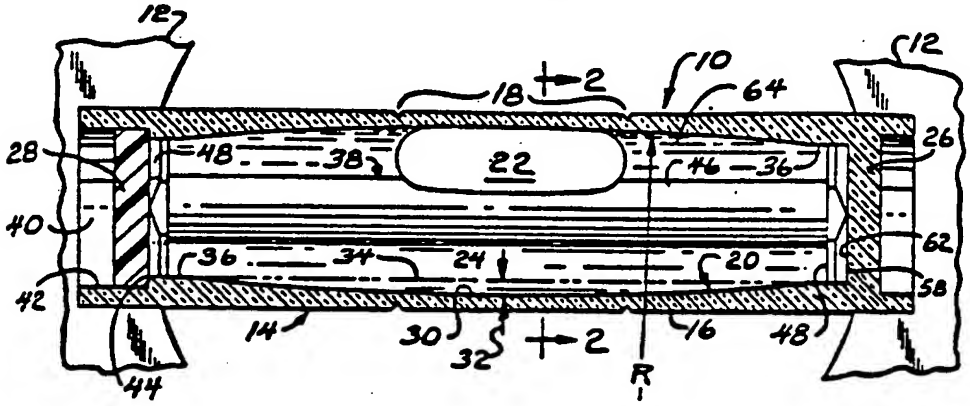
These levels of the prior art are limited in their pitch measuring 1 capability because of the limited amount of curvature that can be formed in the molded barrel vial shape.

The Wright invention is a level-measuring instrument that has an increased range of pitch measurement capability, yet retains the advantages of the barrel vials of the prior art. Claim 1 is representative:

1. A level vial comprising a body having a bore formed with a barrel shaped portion having opposed ends and wherein the barrel curvature is defined by a first radius of curvature,
the barrel shaped portion of the bore having a cross-sectional dimension generally decreasing from the center thereof in axially opposed directions towards the ends thereof,
an axially elongated core member disposed within the bore and between the opposed ends thereof in coaxial relationship with the barrel shaped portion of the body and having a maximum cross-sectional dimension and having a second radius of curvature exceeding that of the first radius of curvature of the barrel shaped bore portion,
a quantity of fluid disposed within the bore and being insufficient to fill the bore and to provide a bubble therein having a dimension sufficient to simultaneously contact the surfaces of the barrel shaped bore portion and the core member,

means for hermetically sealing the bore to contain the fluid and to maintain the bubble therein, the vial body having a transparent portion and indicator means associated therewith to permit visual bubble observation and for indicating preselected positions of the bubble in the vial and wherein the surfaces of the barrel shaped bore portion and the core member coact with the bubble to produce gradual bubble movement axially within the barrel shaped bore portion without abrupt bubble acceleration and while providing a wide range of visually observable angular measures.

The Wright structure is illustrated as follows:

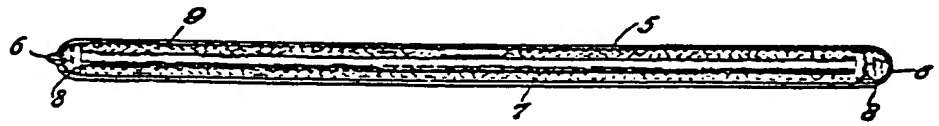


According to the Wright disclosure, by combining a core pin (46) and a barrel vial (14), the indicator bubble (22) does not move as far along the barrel with a given change in pitch, compared with the barrel vials of the prior art. Wright illustrates this phenomenon in his specification (showing a pitch change of 3/8 inch per 12 inches):

Thus the Wright level can measure greater changes of pitch before the bubble reaches the end of the vial.

The Rejection

The Board agreed with Wright that his claimed combination was new. However, because it was known to place a core pin in a cylindrical vial in order to increase the visibility of the bubble, as shown in Bishop U.S. Patent No. 771,803:



the Board held that it would have been obvious to construct a level having a core pin in the barrel-shaped vial of Vaida, irrespective of the purpose. The Commissioner on appeal argued that the Bishop and Vaida references presented, in combination, a prima facie case of unpatentability, stating:

claimed invention may be unpatentable if it would have been obvious for reasons suggested by the prior art, even though those reasons may be different from the reasons relied upon by the inventor and may result in a different advantage.

The PTO position is that since it would have been obvious to make the Wright combination in order to improve visibility of the bubble, it is immaterial that Wright's combination improves pitch measurement.

Discussion

The Commissioner argues that if it is obvious to combine the teachings of prior art references for any purpose, they may be combined in order to defeat patentability of the applicant's admittedly new structure. The PTO states that "a claimed invention may be unpatentable if it would have been obvious for reasons suggested by the prior art, even though those reasons may be different from the reasons relied upon by the inventor and may result in a different advantage." The PTO position is that it is irrelevant that Wright's structure was for a purpose, and has properties, that are neither obtainable from the prior art structures, nor suggested in the prior art. In this lies the PTO's error.

We repeat the mandate of 35 U.S.C. §103: it is the invention as a whole that must be considered

in obviousness determinations. The invention as a whole embraces the structure, its properties, and the problem it solves. *See, e.g., Cable Electric Products, Inc. v. Genmark, Inc* ., 770 F.2d 1015, 1025, 226 USPQ 881, 886 (Fed. Cir. 1985) ("In evaluating obviousness, the hypothetical person of ordinary skill in the pertinent art is presumed to have the 'ability to select and utilize knowledge from other arts reasonably pertinent to [the] particular problem' to which the invention is directed"), *quoting In re Antle* , 444 F.2d 1168, 1171-72, 170 USPQ 285, 287-88 (CCPA 1971); *In re Antonie* , 559 F.2d 618, 619, 195 USPQ 6, 8 (CCPA 1977) ("In delineating the invention as a whole, we look not only to the subject matter which is literally recited in the claim in question . . . but also to those properties of the subject matter which are inherent in the subject matter *and* are disclosed in the specification") (emphasis in original).

The determination of whether a novel structure is or is not "obvious" requires cognizance of the properties of that structure and the problem which it solves, viewed in light of the teachings of the prior art. *See, e.g., In re Rinehart* , 531 F.2d 1048, 1054, 189 USPQ 143, 149 (CCPA 1976) (the particular problem facing the inventor must be considered in determining obviousness); *see also Lindemann Maschinenfabrik GmbH v. American Hoist and Derrick Co* ., 730 F.2d 1452, 1462, 221 USPQ 481, 488 (Fed. Cir. 1984) (it is error to focus "solely on the product created, rather than on the obviousness or nonobviousness of its creation") (quoting *General Motors Corp. v. U.S. Int'l Trade Comm'n* , 687 F.2d 476, 483, 215 USPQ 484, 489 (CCPA 1982), *cert. denied* , 459 U.S. 1105 (1983)).

Thus the question is whether what the inventor did would have been obvious to one of ordinary skill in the art attempting to solve the problem upon which the inventor was working. *Rinehart* , 531 F.2d at 1054, 189 USPQ at 149; *see also In re Benno* , 768 F.2d 1340, 1346, 226 USPQ 683, 687 (Fed. Cir.

1985) ("appellant's problem" and the prior art "present different problems requiring different solutions").

[1] The problem upon which Wright was working was improving the pitch-measuring capability of the level, not the visibility of the bubble. The PTO, having conceded that Wright's structure was unobvious for his intended purpose, erred in holding that this was not relevant. The problem solved by the invention is always relevant. The entirety of a claimed invention, including the

combination viewed as a whole, the elements thereof, and the properties and purpose of the invention, must be considered.

Factors including unexpected results, new features, solution of a different problem, novel properties, are all considerations in the determination of obviousness in terms of 35 U.S.C. §103. When such factors are described in the specification they are weighed in determining, in the first instance, whether the prior art presents a prima facie case of obviousness. *See, e.g .*, *In re Margolis* , 785 F.2d 1029, 1031, 228 USPQ 940, 942 (Fed. Cir. 1986) (comparative data in the specification must be considered in PTO determination of unexpected results, as part of 'the entire body of evidence . . . which must be weighed in the first instance by the PTO.") When such factors are brought out in prosecution before the PTO, they are considered in determining whether a prima facie case, if made based on the prior art, has been rebutted. *See, e.g., In re Piasecki* , 745 F.2d 1468, 1472, 223 USPQ 785, 789 (Fed. Cir. 1984) (rebuttal evidence is considered along with all other evidence of record). In either case, the requisite view of the whole invention mandates consideration of not only its structure but also its properties and the problem solved.

Applicant Wright agrees that he has combined old elements. The Commissioner agrees that Wright has achieved a new combination, and that the result obtained thereby is not suggested in the references. The patentability of such combinations is of ancient authority. *See, e.g., Prouty v. Draper* , 41 U.S. (16 Pet.) 336, 341 (1842); *Eames v. Godfrey* , 68 U.S. (1 Wall.) 78, 79-80 (1863); *Gill v. Wells* , 89 U.S. (22 Wall.) 1, 25 (1874); *see also* H.T. Markey, *Why Not the Statute* ?, 65 J. Pat. Off. Soc'y 331, 333-34 (1983) ("virtually all inventions are 'combinations', and . . . *every* invention is formed of 'old elements'. . . . Only God works from nothing. Man must work with old elements").

The PTO position that the claimed structure is prima facie obvious is not supported by the cited references. No reference shows or suggests the properties and results of Wright's claimed structure, or suggests the claimed combination as a solution to the problem of increasing pitch measurement capacity. It is not pertinent whether Wright's new structure also has the prior art attribute of increased visibility of the bubble, for that is not his invention.

The Commissioner on appeal defends the fact that the Board and the examiner never reached this analysis. The Board relied on *In re Wiseman* , 596 F.2d 1019, 201 USPQ 658 (CCPA 1979), to support the Board's statement:

If the claimed subject matter would have been obvious from the references, it is immaterial that

the references do not state the problem or advantages ascribed thereto by appellant. *Wiseman* does not support the generalization that the Board attributes to it. In *Wiseman* the prior art reference showed a similar problem and suggested a similar solution to that of the applicant. Specifically, the prior art showed a disc brake having grooves for the purpose of venting dust generated during use; the applicant showed a disc brake having grooves for the purpose of venting steam generated during use. The applicant asserted no results or properties that were not fairly suggested by the prior art. The court's discussion in *Wiseman* must be viewed in context, and as with all section 103 decisions, judgment must be brought to bear based on the facts of each case.

Conclusion

The rejection of claims 1 through 8 was in error. The Board's decision is

REVERSED

Footnotes

Footnote 1. The pitch is the degree to which a given surface is not level. "Pitch" vials measure a range of pitch angles.

- End of Case -

IN THE DRAWINGS:

Please cancel all previously filed drawings, and please add the enclosed replacement formal drawings for FIG. 1, FIG. 2, FIG. 2a and FIG. 2b.